WHAT IS CLAIMED IS:

1. An air conditioning system for a vehicle having a passenger compartment, the system comprising:

a case defining an air passage through which air flows into the passenger compartment;

a cooling heat exchanger, disposed in the air passage, for cooling air;

a heating heat exchanger, disposed at a downstream side of the cooling heat exchanger in an air flow direction, for heating air;

an air mixing door which is disposed to adjust a flow amount ratio between air passing through the heating heat exchanger and air bypassing the heating heat exchanger; and

a cold accumulator which is disposed between a downstream side of the cooling heat exchanger and an upstream side of the air mixing door in the air flow direction to be cooled by cold air after passing through the cooling heat exchanger.

2. The air conditioning system according to claim 1, wherein the case has therein a bypass passage through which air bypasses the cooling heat exchanger and the cold accumulator, the system further comparing

a bypass door which is disposed to adjust a flow amount of air passing through the bypass passage while bypassing the cooling heat exchanger and the cold accumulator.

3. The air conditioning system according to claim 1, wherein the cold accumulator and the cooling heat exchanger are integrally disposed to form an integrated structure.

4. The air conditioning system according to claim 1, wherein:

the cold accumulator has a plurality of tubes each of which is made of a metal being cooled by the cold air, and a cold accumulating material sealed in the tubes; and

the cold accumulating material has a phase change in accordance with a temperature change.

5. The air conditioning system according to claim 4, wherein the tubes are stacked on each other to define a cold air passage between adjacent tubes in such a manner that cold air from the cooling heat exchanger passes through the cold air passage in a wave shape.

6. The air conditioning system according to claim 1, wherein:

the cold accumulator has a tube folded and bent in a serpentine shape to form a plurality of folded tube portions, and a cold accumulating material sealed in the tube; and

the cold accumulating material has a phase change in accordance with a temperature change.

7. The air conditioning system according to claim 6,

wherein the cold accumulator further has a fin disposed between the folded tube portions.

8. The air conditioning system according to claim 6, wherein a plurality of the tubes, each of which is folded and bent in a serpentine shape, are disposed to be connected integrally.

9. The air conditioning system according to claim 1, wherein the cold accumulator has a plurality of tubes arranged in a direction and filled with a cold accumulating material, and a fixing member disposed to fix both ends of each of the tubes.

10. The air conditioning system according to claim 9, wherein:

each of the tubes has a flat shape in cross-section;

the tubes are arranged so that a major direction of the flat shape of each tube is along the air flow direction in the cold accumulator;

the fixing member has a plurality of recesses arranged to correspond to the arrangement of the tubes; and

at least one side ends of the tubes are fitted into the recesses of the fixing member, respectively.

11. The air conditioning system according to claim 1, wherein:

the cold accumulator has at least a first cold accumulating portion and a second cold accumulating portion;

the first cold accumulating portion has therein a first cold accumulating material; and

the second cold accumulating portion has therein a second cold accumulating material different from the first cold accumulating material.

12. The air conditioning system according to claim 11, wherein:

the cold accumulator has therein an inner partition member; and

the first cold accumulating portion and the second cold accumulating portion are integrally disposed to be defined by the inner partition member.

13. The air conditioning system according to claim 11, wherein:

the first cold accumulating material has a melting point higher than that of the second cold accumulating material; and

the first cold accumulating portion is disposed at an upstream side of the second cold accumulating portion in the air flow direction.

14. The air conditioning system according to claim 1, wherein:

the cooling heat exchanger is an evaporator of a refrigerant cycle having a compressor that is driven by an engine for traveling the vehicle, the engine being stopped when power of the engine for traveling the vehicle is unnecessary.

15. The air conditioning system according to claim 1, further comprising:

a control unit for controlling temperature of air to be blown into the passenger compartment, wherein:

the control unit controls temperature of the cooling heat exchanger to a target cooling temperature;

in a cold accumulation mode for performing a cold accumulation in the cold accumulator, the control unit sets the target cooling temperature at an initial target temperature; and

when the control unit determines a finish of the cold accumulation in the cold accumulator, the control unit sets the target cooling temperature to be switched from the initial target temperature to a predetermined temperature that is higher than the initial target temperature.

16. An air conditioning system for a vehicle having a passenger compartment, the system comprising:

a case defining an air passage through which air flows into the passenger compartment;

a cooling heat exchanger, disposed in the air passage,

for cooling air;

a heating heat exchanger, disposed at a downstream side of the cooling heat exchanger in an air flow direction, for heating air;

a heating adjustment member which is disposed to adjust a heating capacity of the heating heat exchanger; and

a cold accumulator which is disposed between a downstream side of the cooling heat exchanger and an upstream side of the heating heat exchanger in the air flow direction to be cooled by cold air after passing through the cooling heat exchanger.

17. The air conditioning system according to claim 16, wherein the case has therein a bypass passage through which air bypasses the cooling heat exchanger and the cold accumulator, the system further comparing

a bypass door which is disposed to adjust a flow amount of air passing through the bypass passage while bypassing the cooling heat exchanger and the cold accumulator.

18. The air conditioning system according to claim 16, wherein the cold accumulator and the cooling heat exchanger are integrally disposed to form an integrated structure.

19. The air conditioning system according to claim 16, wherein:

the cold accumulator has a plurality of tubes each of which is made of a metal being cooled by the cold air, and a cold accumulating material sealed in the tubes; and

the cold accumulating material has a phase change in accordance with a temperature change.

20. The air conditioning system according to claim 19, wherein the tubes are stacked on each other to define a cold air passage between adjacent tubes in such a manner that cold air from the cooling heat exchanger passes through the cold air passage in a wave shape.

21. The air conditioning system according to claim 16, wherein:

the cold accumulator has a tube folded and bent in a serpentine shape to form a plurality of folded tube portions, and a cold accumulating material sealed in the tube; and

the cold accumulating material has a phase change in accordance with a temperature change.

22. The air conditioning system according to claim 21, wherein the cold accumulator further has a fin disposed between the folded tube portions.

23. The air conditioning system according to claim 21, wherein a plurality of the tubes, each of which is folded and bent in a serpentine shape, are disposed to be connected

integrally.

24. The air conditioning system according to claim 16, wherein the cold accumulator has a plurality of tubes arranged in a direction and filled with a cold accumulating material, and a fixing member disposed to fix both ends of each of the tubes.

25. The air conditioning system according to claim 24, wherein:

each of the tubes has a flat shape in cross-section;

the tubes are arranged so that a major direction of the flat shape of each tube is along the air flow direction in the cold accumulator;

the fixing member has a plurality of recesses arranged to correspond to the arrangement of the tubes; and

at least one side ends of the tubes are fitted into the recesses of the fixing member, respectively.

26. The air conditioning system according to claim 16, wherein:

the cold accumulator has at least a first cold accumulating portion and a second cold accumulating portion;

the first cold accumulating portion has therein a first cold accumulating material; and

the second cold accumulating portion has therein a second cold accumulating material different from the first

cold accumulating material.

27. The air conditioning system according to claim 26, wherein:

the cold accumulator has therein an inner partition member; and

the first cold accumulating portion and the second cold accumulating portion are integrally disposed to be defined by the inner partition member.

28. The air conditioning system according to claim 26, wherein:

the first cold accumulating material has a melting point higher than that of the second cold accumulating material; and

the first cold accumulating portion is disposed at an upstream side of the second cold accumulating portion in the air flow direction.

29. The air conditioning system according to claim 16, wherein:

the cooling heat exchanger is an evaporator of a refrigerant cycle having a compressor that is driven by an engine for traveling the vehicle, the engine being stopped when power of the engine for traveling the vehicle is unnecessary.

30. The air conditioning system according to claim 16, further comprising:

a control unit for controlling temperature of air to be blown into the passenger compartment, wherein:

the control unit controls temperature of the cooling heat exchanger to a target cooling temperature;

in a cold accumulation mode for performing a cold accumulation in the cold accumulator, the control unit sets the target cooling temperature at an initial target temperature; and

when the control unit determines a finish of the cold accumulation in the cold accumulator, the control unit sets the target cooling temperature to be switched from the initial target temperature to a predetermined temperature that is higher than the initial target temperature.

31. An air conditioning system for a vehicle having a passenger compartment, the system comprising:

a cooling heat exchanger disposed for cooling air to be blown into the passenger compartment;

a cold accumulator disposed at a downstream air side of the cooling heat exchanger to be cooled by cold air after passing through the cooling heat exchanger; and

a control unit for controlling temperature of air to be blown into the passenger compartment, wherein:

the control unit controls temperature of the cooling heat exchanger to a target cooling temperature;

in a cold accumulation mode for performing a cold accumulation in the cold accumulator, the control unit sets the target cooling temperature at an initial target temperature; and

when the control unit determines a finish of the cold accumulation in the cold accumulator, the control unit sets the target cooling temperature to be switched from the initial target temperature to a predetermined temperature that is higher than the initial target temperature.

32. The air conditioning system according to claim 31, wherein:

the cold accumulator has therein a cold accumulating material with a phase change; and

the control unit sets the initial target temperature to be lower than a melting temperature of the cold accumulating material.

33. The air conditioning system according to claim 32, wherein:

when the melting temperature of the cold accumulating material is T0, the initial target temperature is TEOB1 and the predetermined temperature is TEOB2, the melting temperature, the initial target temperature and the predetermined temperature have a temperature relationship of $T0 > TEOB2 > TEOB1 > 0℃$.

34. The air conditioning system according to claim 33, wherein:

after a predetermined time passes after the finish of the cold accumulation in the cold accumulator, the control unit switches the predetermined target temperature to an air-conditioning target temperature determined based on an air-conditioning environment condition.

35. The air conditioning system according to claim 32, further comprising:

a temperature detecting unit disposed to detect temperature of the cold accumulator, wherein:

when the temperature of the cold accumulator, detected by the temperature detecting unit, is lower than the melting temperature of the cold accumulating material, the control unit determines that the cold accumulation of the cold accumulating material in the cold accumulator is finished.

36. The air conditioning system according to claim 31, wherein the cooling heat exchanger and the cold accumulator are integrally disposed to form an integrated structure.

37. The air conditioning system according to claim 31, wherein the cooling heat exchanger is an evaporator of a refrigerant cycle having a compressor that is driven by an engine for traveling the vehicle, the system further

comprising:

a temperature detecting unit disposed for detecting temperature of the evaporator,

wherein the control unit controls operation of the compressor based on the temperature of the evaporator.

38. The air conditioning system according to claim 37, wherein the engine is stopped when power of the engine for traveling the vehicle is unnecessary.